

# Twitter Sentiment Analysis of Politicians

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# Overview

- Analyze tweets from famous Democrats/Republicans.
- Look for interesting correlations.
- We have found some interesting information about:
  - Tweeting habits
  - Views
  - Twitter Support base



Photo courtesy of techspot.com

# Politicians Analyzed:

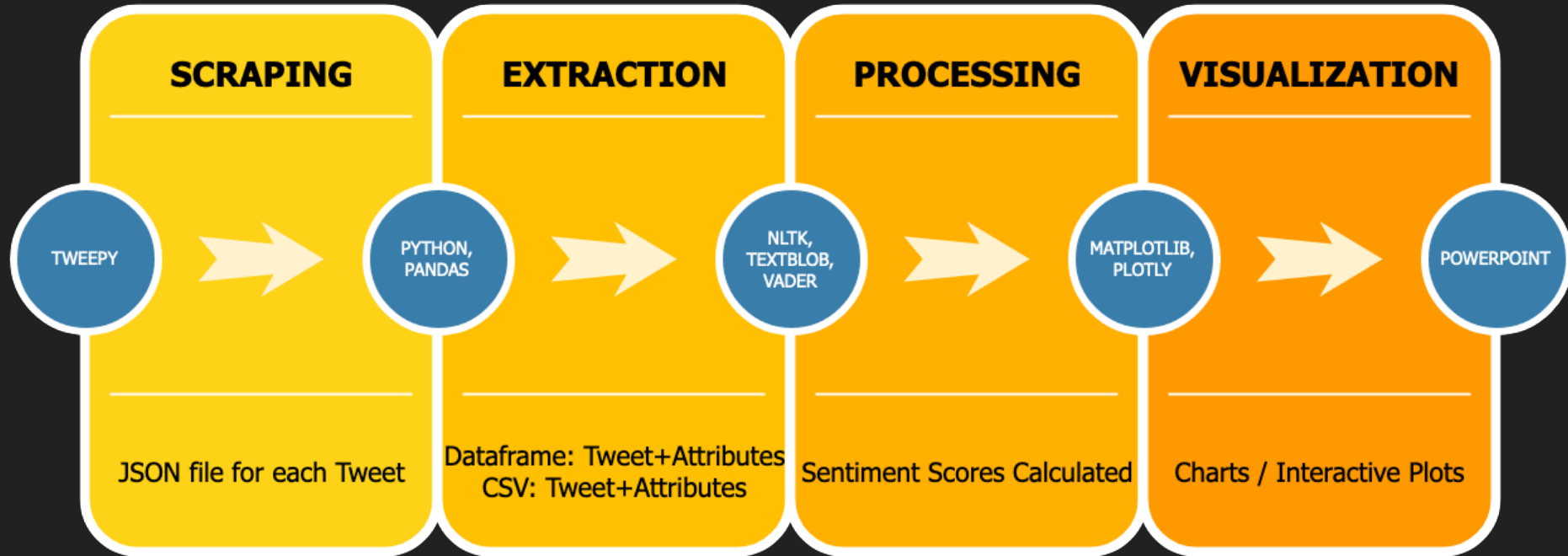
## Democrats:

- Bernie Sanders
- Hillary Clinton
- Barack Obama
- Richard Blumenthal
- Sherrod Brown
- Maria Cantwell
- Elizabeth Warren
- Chuck Schumer
- Kamala Harris
- Cory Booker
- Andrew Yang
- Amy Klobuchar
- Mazie Hirono
- Tammy Baldwin
- Bob Casey

## Republicans:

- Donald J. Trump
- Rand Paul
- Ted Cruz
- Jeb Bush
- Lamar Alexander
- Marsha Blackburn
- John Boozman
- Richard Burr
- Roy Blunt
- Bill Cassidy
- Tom Cotton
- Tom Perez
- Tim Scott
- Ronna McDaniel
- Mitch McConnell

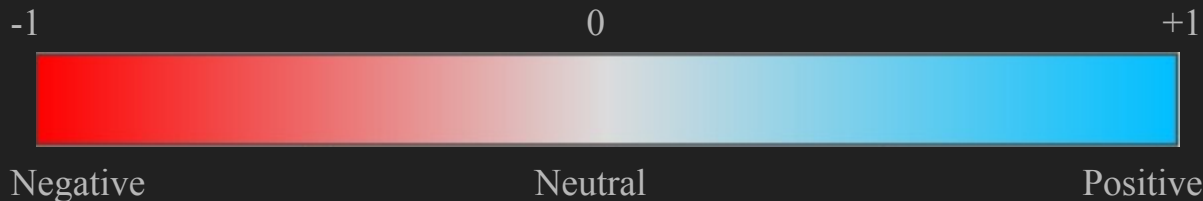
# Methodology



# Sentiment Scores

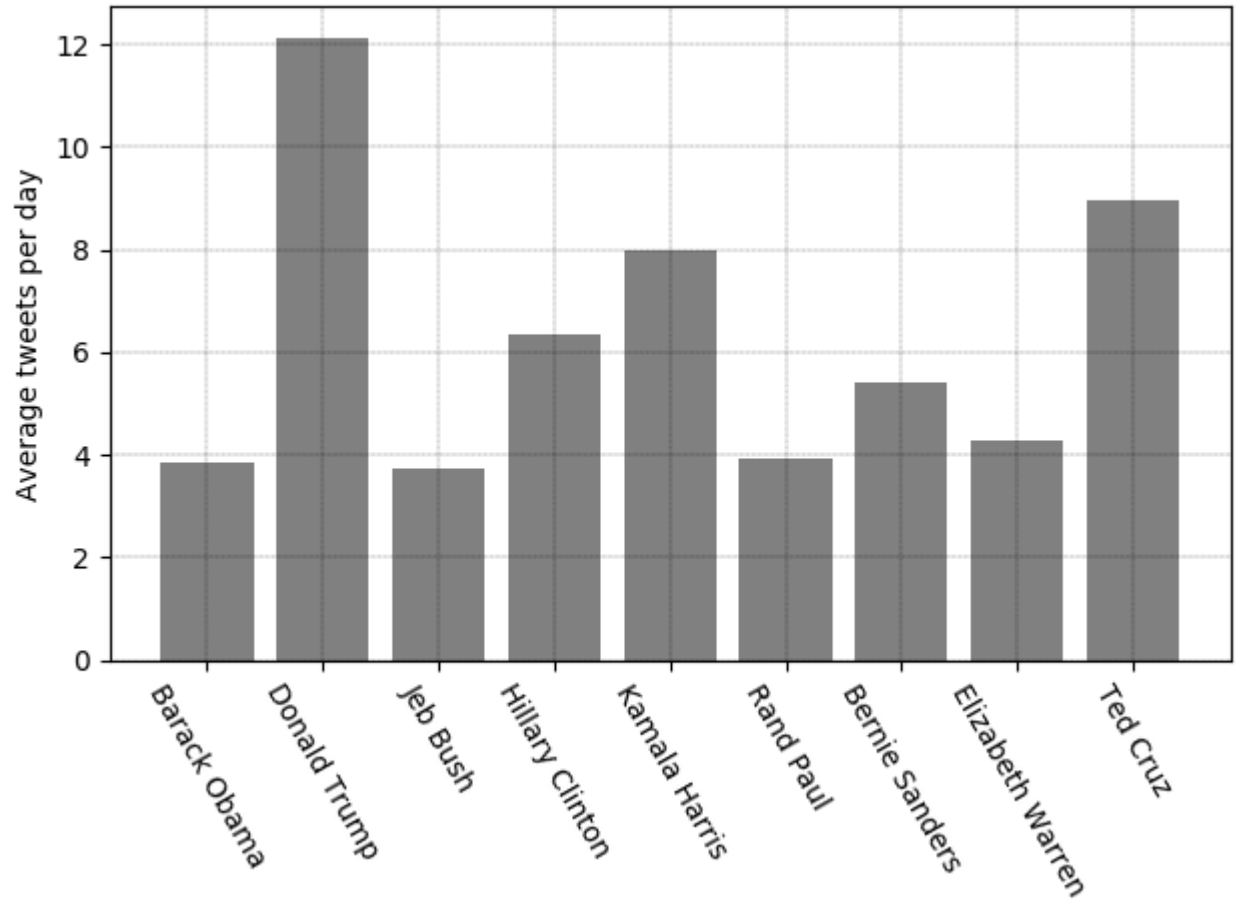
- Calculated using a Lexicon to assign scores to n-grams and find Polarity and Subjectivity scores for a given string.

- Subjectivity:  $[0, 1]$
- Polarity:  $[-1, 1]$
- Polarity scale:



# Average daily tweets

How do these politicians spend their time?

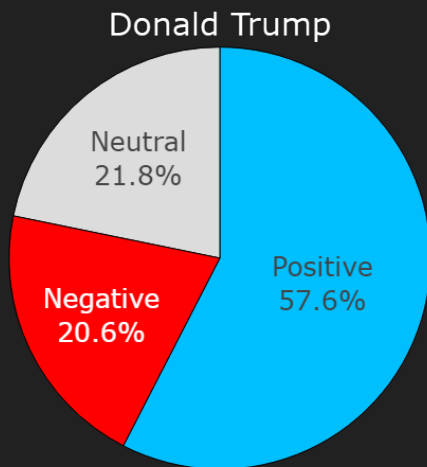


# Sentiment Trends in Tweets

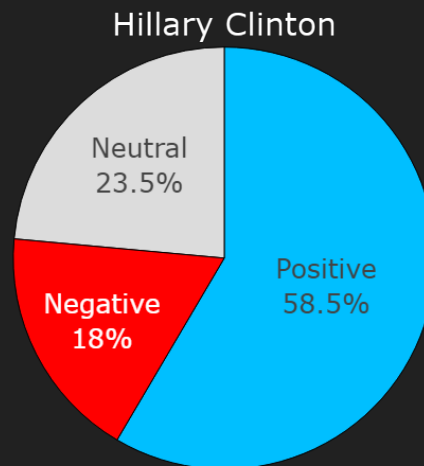
- Percentage of Positive, Negative, and Neutral tweets for some famous politicians.



# HEAD to HEAD



- Positive
- Neutral
- Negative



- Positive
- Neutral
- Negative

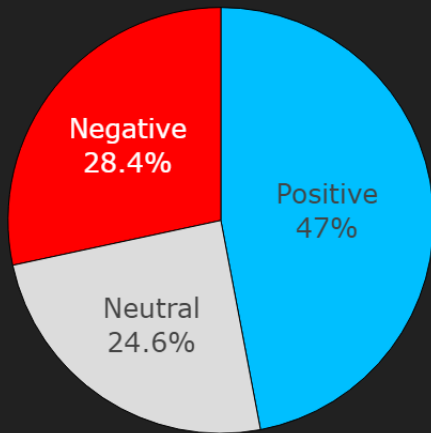




# HEAD to HEAD

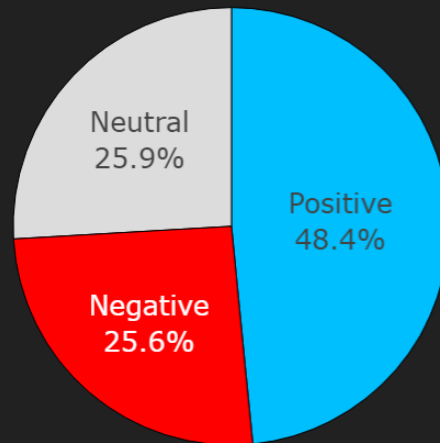


Elizabeth Warren



- Positive
- Negative
- Neutral

Bernie Sanders



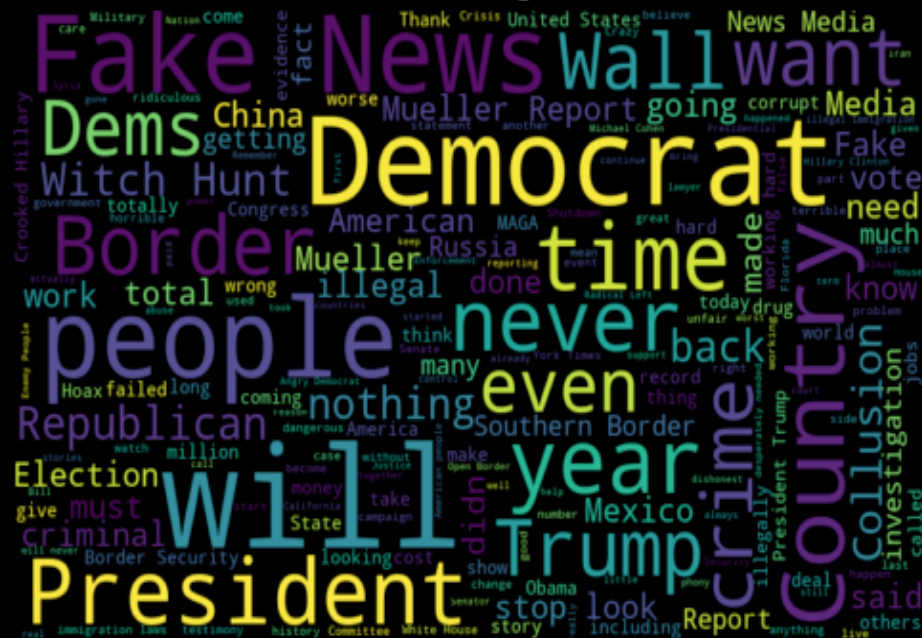
- Positive
- Neutral
- Negative

# Word Clouds

- Word Cloud of Positive Tweets and of Negative Tweets



### Word Cloud from Negative Tweets:



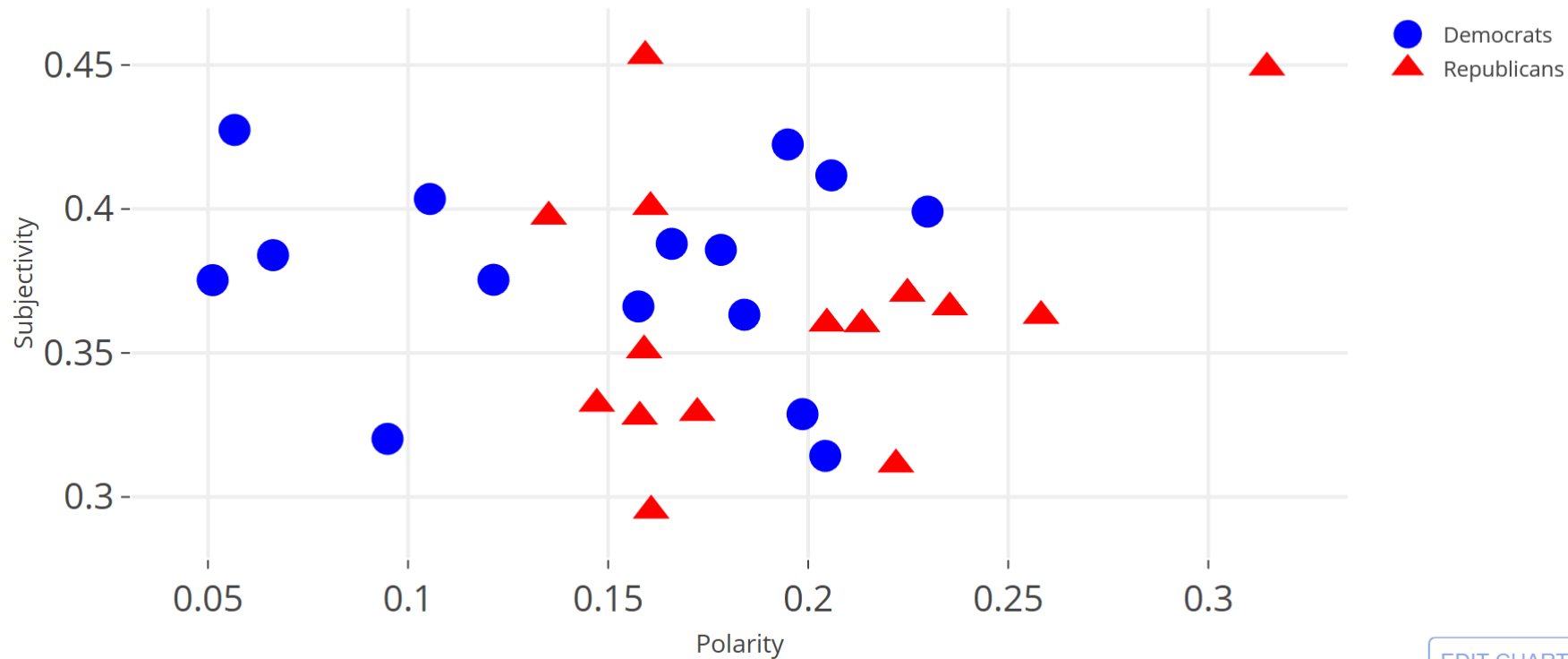


# Subjectivity and Polarity trends of politicians

- Analysis of the subjectivity and polarity of tweets by democrats and republicans

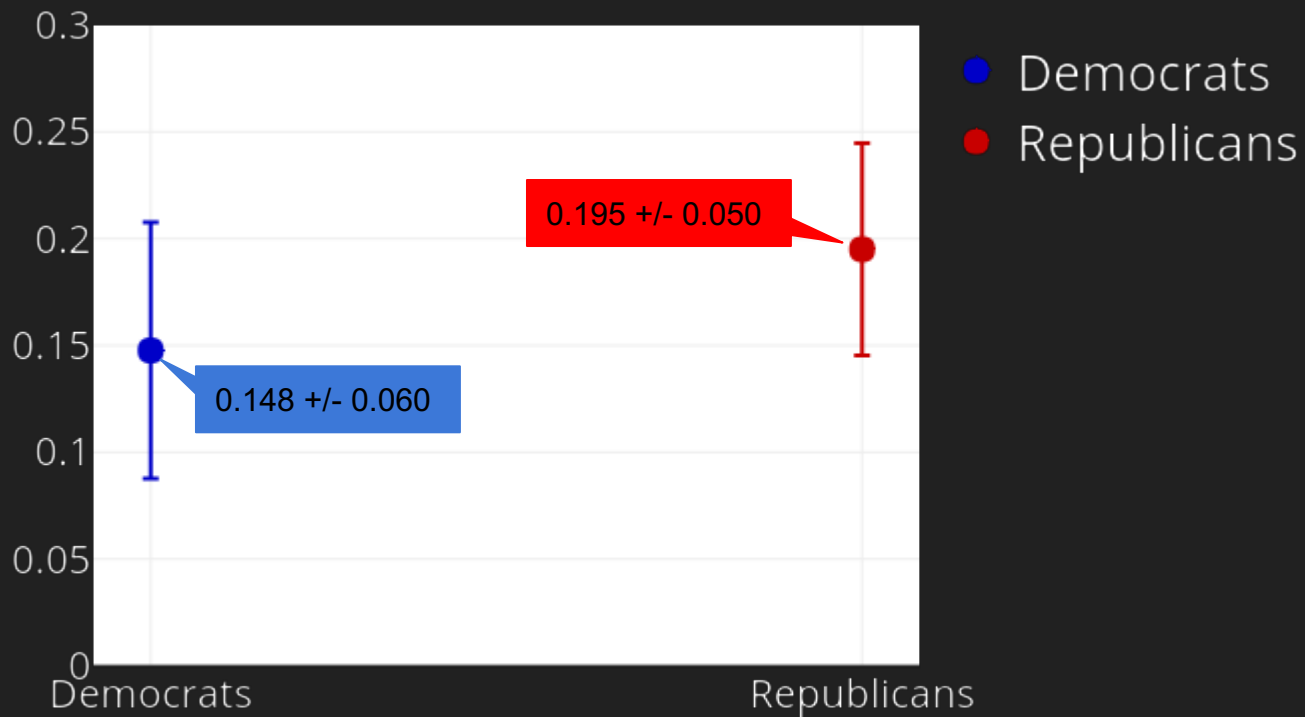


## Subjectivity and Polarity



[EDIT CHART](#)

# Average Polarity



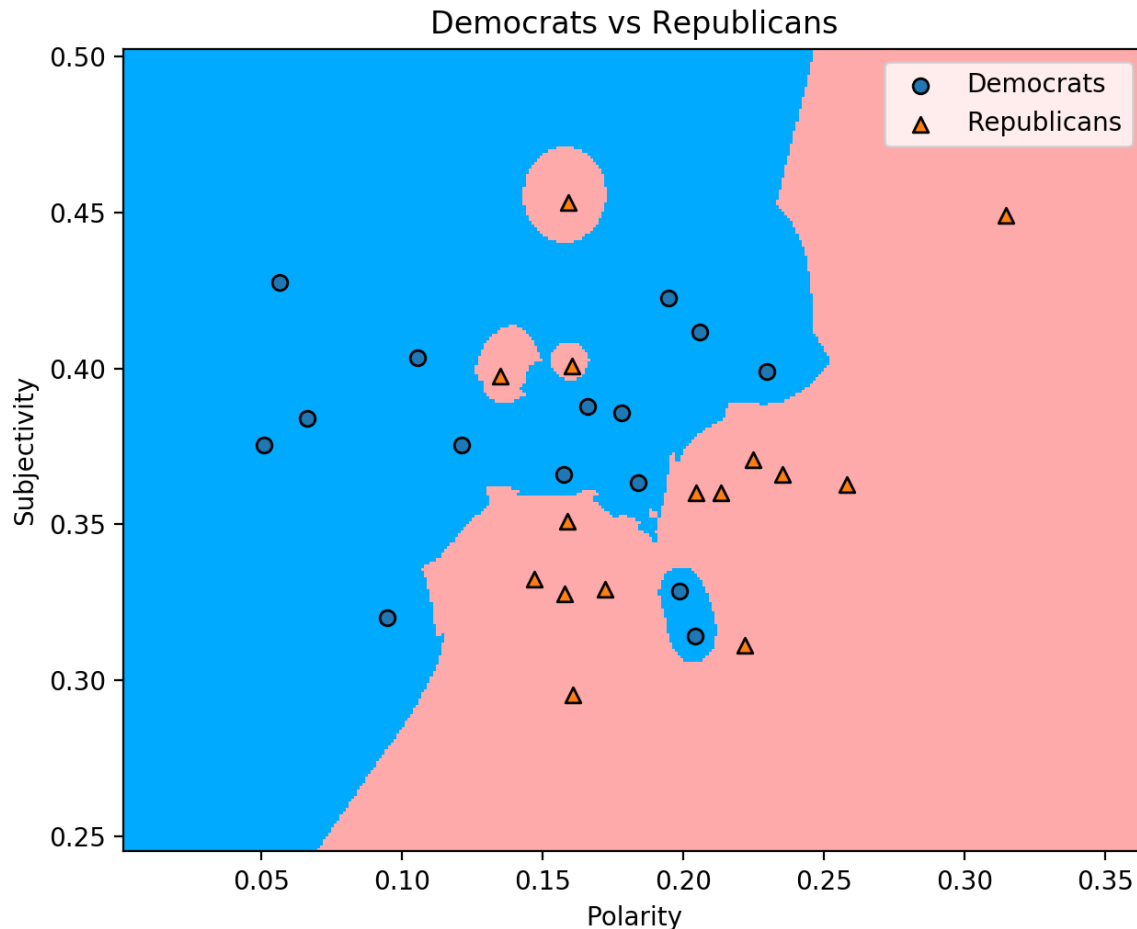
# Outliers (KNN)

## Republicans:

- Donald Trump
- Tom Perez
- Ronna McDaniel

## Democrats:

- Barack Obama
- Andrew Yang





# Polarity trend of the tweets with time

- Plot of change of polarity of sentiments of tweets over time

# Trend analysis

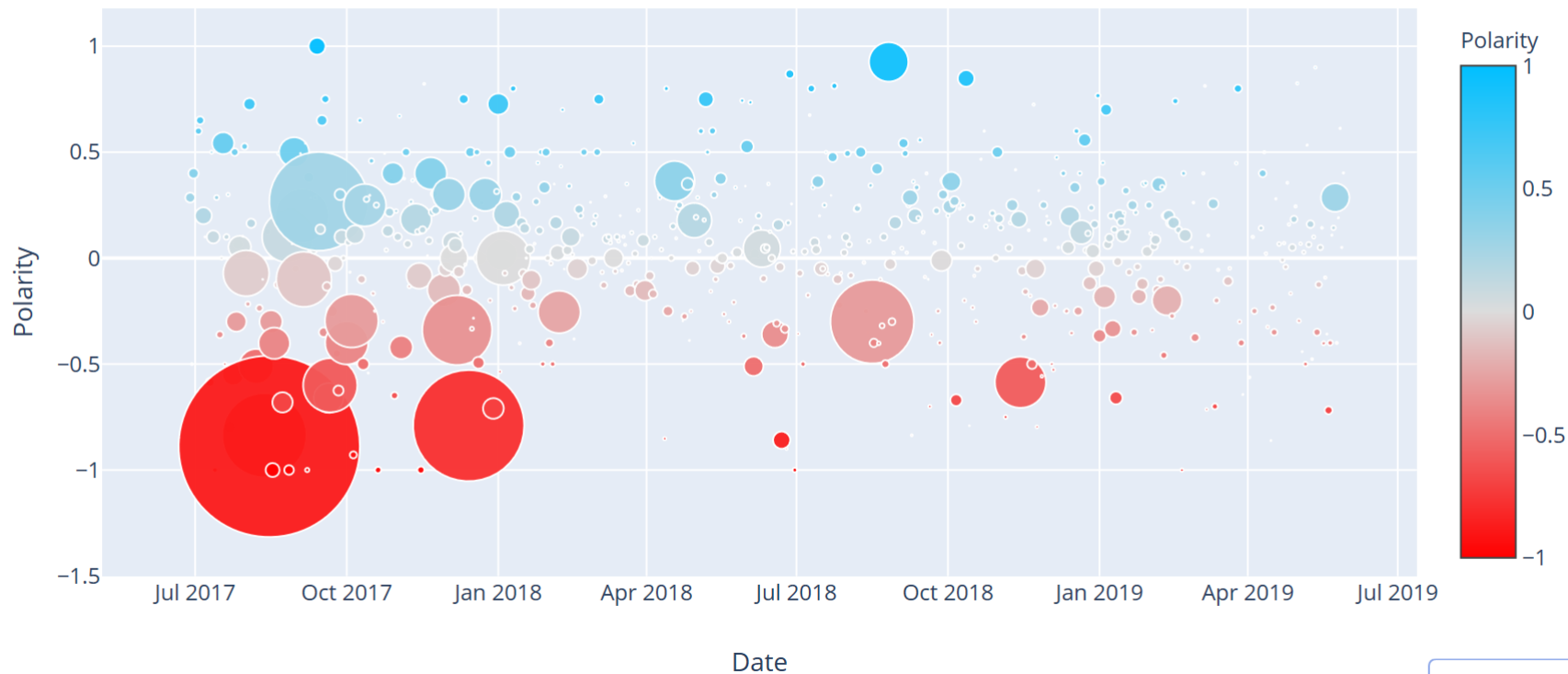
- X - axis is Time
- Y - axis is Polarity
- Size of bubble corresponds to engagement
- Engagement is a custom metric:

$$\text{Engagement} = \text{Normalized ( Retweets*2 + Favourites )}$$

- Bigger bubble = More popular tweet
- Is there a correlation between Polarity and Engagement?



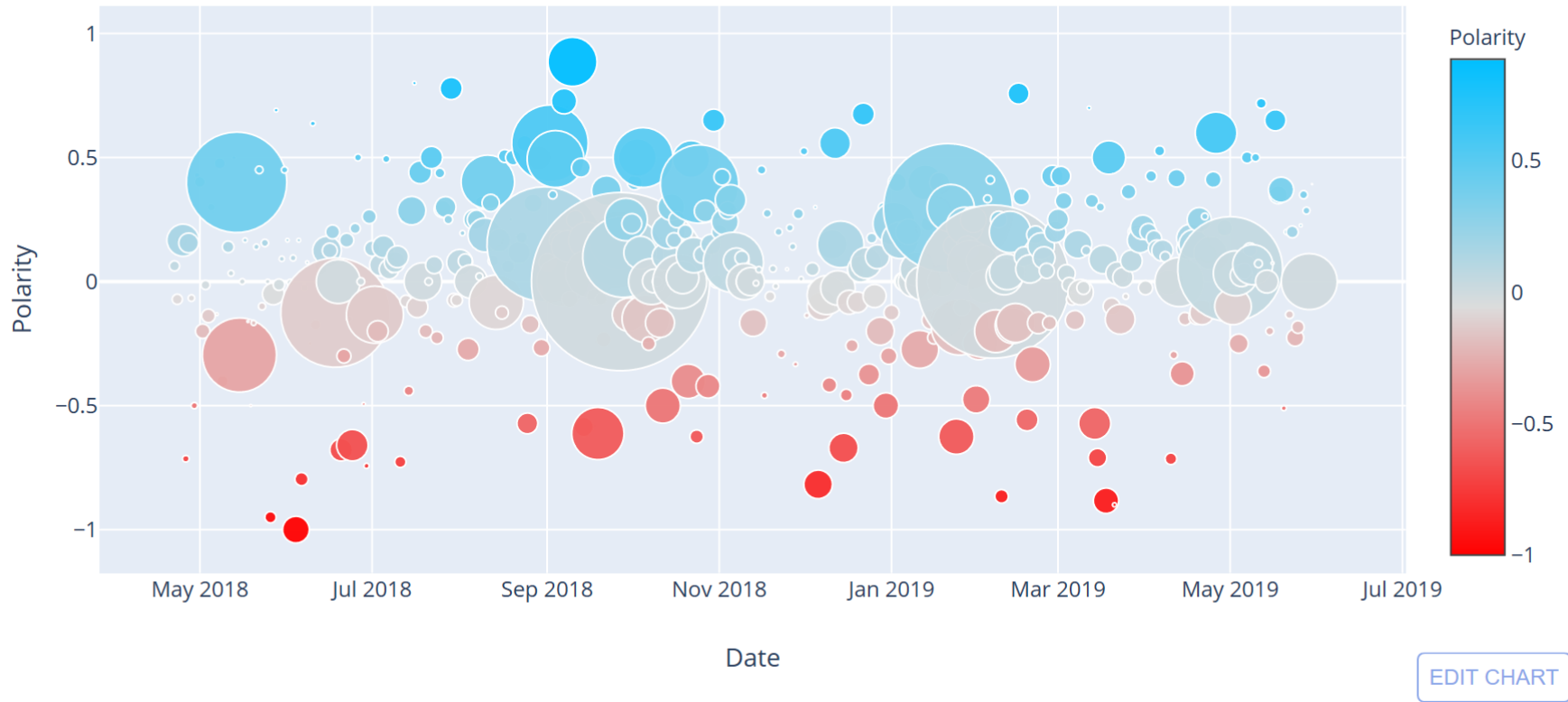
## Bernie Sanders - Engagement vs. Polarity



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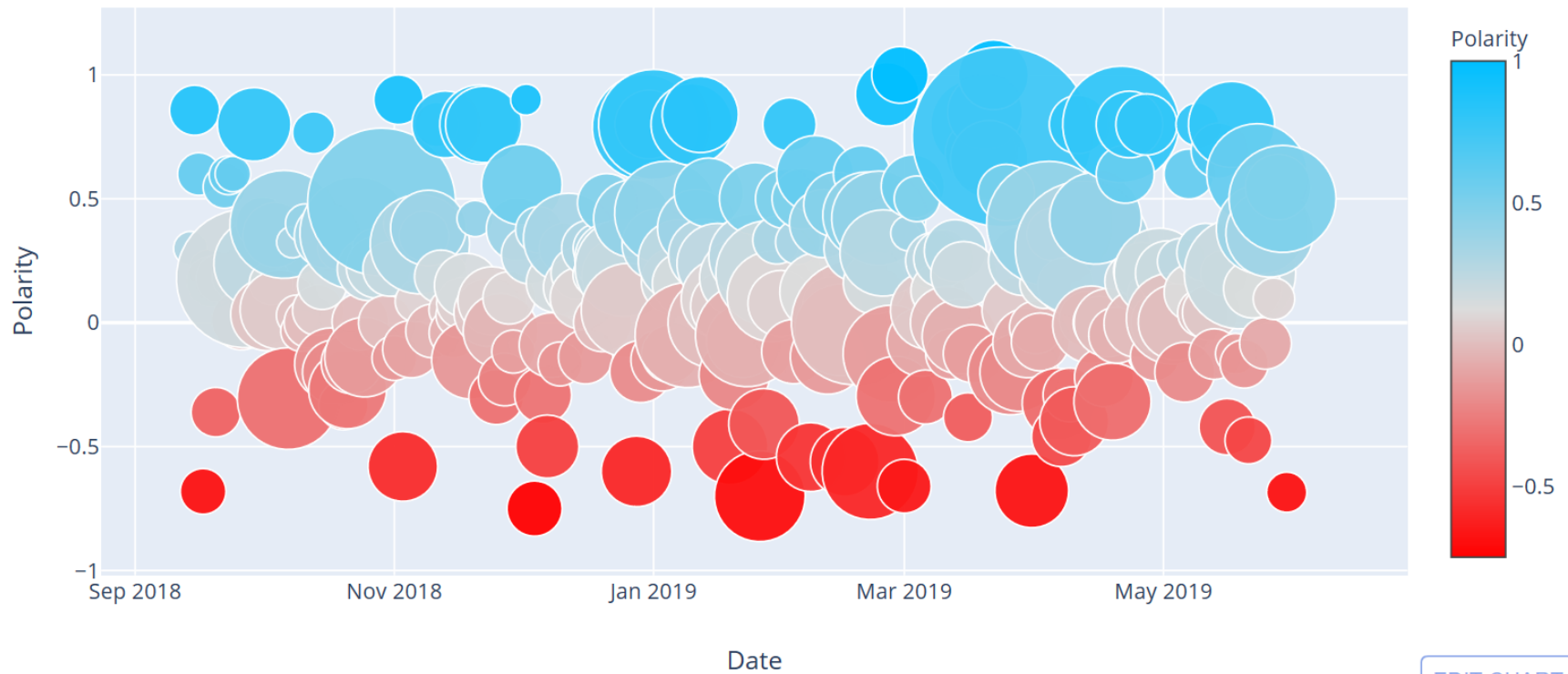


# Kamala Harris - Engagement vs. Polarity





## Donald J. Trump - Engagement vs. Polarity



# Sentiment Analysis - Christchurch Shootings



**Donald J. Trump** ✓

@realDonaldTrump

Follow

The Fake News Media is working overtime to blame me for the horrible attack in New Zealand. They will have to work very hard to prove that one. So Ridiculous!

6:38 AM - 18 Mar 2019

28,681 Retweets 134,374 Likes



38K 29K 134K



**Barack Obama** ✓

@BarackObama

Following

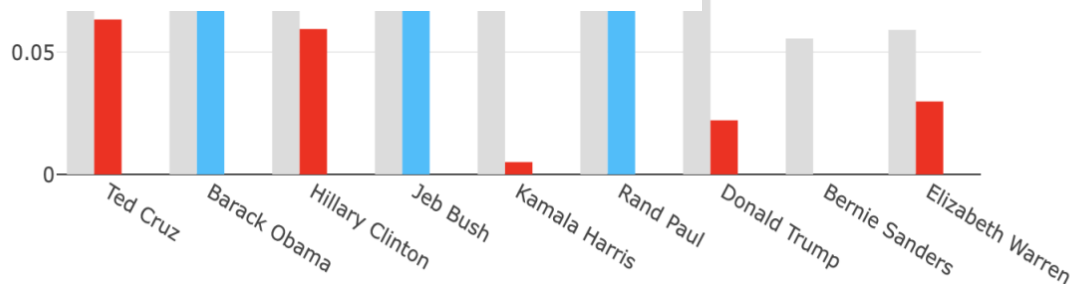
Michelle and I send our condolences to the people of New Zealand. We grieve with you and the Muslim community. All of us must stand against hatred in all its forms.

6:15 AM - 15 Mar 2019

109,893 Retweets 666,828 Likes



11K 110K 667K



# Conclusion

Objective analysis

People's thoughts

Democrats vs. Republicans

Different in tweeting habits

Individual Analysis

Engagement varies

Thank you!